REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-9 and 12-13 are pending in this application. Claims 1, 3, 5 and 12 are amended; and Claims 10-11 are canceled without prejudice or disclaimer by the present amendment. Support for the amended claims can be found in the original specification, claims and drawings. Thus, no new matter is presented.

In the Office Action, Claims 1-13 are rejected under 35 U.S.C. § 112, second paragraph; and Claims 1-13 are rejected under 35 U.S.C. § 103(a) as unpatentable over Juttner et al. (U.S. Pat. 7,020,086, herein Juttner) in view of Sheu et al. (IEEE ICC, pp. 611-618, "A Fast and Efficient Heuristic Algorithm for the Delay and Delay Variation Bound Multicast Tree Problem," 2001, herein Sheu).

The undersigned appreciatively acknowledge the courtesy extended by Examiner Nguyen in holding a personal interview with the undersigned on May 4, 2009. During the interview an overview of the invention was presented, and proposed claim amendments were discussed, which Examiner Nguyen agreed would "overcome the primary reference" (Juttner). Accordingly, the amendments discussed during the interview are incorporated by the present amendment, and the arguments presented during the interview are reiterated below.

Regarding the rejection of Claims 1-13 under 35 U.S.C. § 112, second paragraph, Claims 1, 3, 5, 10 and 12 are amended to recite "a maximum value and a minimum value" instead of "the maximum value and the minimum value".

Accordingly, Applicants respectfully request that the rejection of Claims 1-13 under 35 U.S.C. § 112, second paragraph, be withdrawn.

The Office Action rejects Claims 1-13 under 35 U.S.C. § 103(a) as unpatentable over Juttner in view of Sheu. Applicants respectfully traverse this rejection, as independent Claims 1, 3, 5, 10 and 12 recite novel features clearly not taught or rendered obvious by the applied references.

Independent Claim 1 is directed to a ***multicast*** communication path calculation method for obtaining ***multicast*** paths from a given source node to ***a plurality of destination nodes*** in a network including a plurality of nodes. The method, in part, comprises:

> obtaining minimum delay paths from the source node to ***each of the plurality of destination nodes*** using topology information and delay information of the network;
>
> selecting candidate nodes of a rendezvous point node ***only from nodes on one of the obtained minimum delay paths***;
>
> for each of the candidate nodes [on the one minimum delay path], calculating minimum delay paths from the candidate node to each of the destination nodes, and obtaining a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths;
>
> selecting, as the rendezvous point node, the candidate node for which the difference is smallest among differences for all of the candidate nodes...

Independent Claims 3, 5 and 12, while directed to alternative embodiments, recite similar features. Accordingly, the remarks and arguments presented below are applicable to each of independent Claims 1, 3, 5 and 12.

As disclosed in an exemplary embodiment at Figs. 5-9 of the specification, the claimed configuration is directed to a multicast system that includes a source node 20 and a plurality of destination nodes 20. Minimum delay paths from the source node 20 to each of the plurality of destination nodes 1-5 are obtained using topology and delay information of the network. Then (as recited in Claim 2, for example), the minimum delay path having the maximum delay is selected, and candidate nodes of a rendezvous point node are selected only from the nodes on the selected path (e.g., only from nodes on one of the obtained minimum delay paths).

In rejecting the features of Claim 1 directed to obtaining the minimum delay paths and selecting candidate nodes, the Office Action relies on Fig. 2 and col. 3, ll. 3-11 of Juttner. This cited portion of Juttner describes using a "Breadth-First Search" method to determine a path from a single source node (S) to a single destination node (T). This method includes determining a delay of all initial links, and then, building on that link, considers subsequent links, again, using only the one with the minimal delay. Juttner describes that to establish a path from node S to node T (e.g., a single destination node), the Breadth-First Search method would first determine the delay in links S-A, S-B and S-C, which are each intermediate nodes between nodes S and T. The method would then select the link with the least delay, e.g. S-C, and then determine which links out of C-B, C-X, C-Y and C-Z have the smallest delay. The delay for each link is determined and is added to the previous links, to maintain a running total. This continues until either the destination is reached, the delay constraint is reached, or there is no possibility to improve the path.

Juttner, therefore, merely describes a process of determining the shortest delay path between node S and node T by determining the shortest delay between each subsequently selected intermediate node in the network. Thus, Juttner fails to teach or suggest "obtaining minimum delay paths from the source node to ***each of the plurality of destination nodes***". As disclosed in an exemplary embodiment at Figs. 6-9 of the specification, this process includes determining minimum delay paths from a source node 20 to ***each of a plurality of destination nodes*** 1-5, then selecting candidate nodes of a rendezvous point node only from nodes on one of the obtained minimum delay paths.

Juttner, on the other hand, merely describes a process used to try to obtain a minimum delay path from a single source node S to a single destination node T. Juttner does not obtain ***minimum delay paths*** (plural), whatsoever.

Further, the Office Action appears to assert that node C corresponds to a candidate node of a rendezvous point node. Node C in Juttner, however, is merely the first selected candidate node on path between node S and node T, and is not a node from one of a plurality of ***obtained minim delay paths*** between a source node ***and each of a plurality of destination nodes***, as claimed.

Sheu, the secondary reference, is relied upon to reject the claimed features directed to calculating differences between the minimum delay paths and fails to remedy the above noted deficiencies of Juttner.

Therefore, Juttner, even if combined with Sheu fails to teach or suggest "obtaining minimum delay paths from the source node to ***each of the plurality of destination nodes*** using topology information and delay information of the network" and "selecting candidate nodes of a rendezvous point node only from nodes on one of the obtained minimum delay paths", as recited in amended independent Claim 1.

Accordingly, Applicant respectfully requests that the rejection of Claim 1 under 35 U.S.C. § 103 be withdrawn. For substantially similar reasons, it is also submitted that independent Claims 3, 5 and 12 patentably define over Juttner and Sheu and Applicant respectfully requests that the rejection of these claims under 35 U.S.C. § 103 be withdrawn.

The Office Action also rejects dependent Claims 2, 6 and 13 under 35 U.S.C. § 103 as unpatentable over Juttner and Sheu. Applicants respectfully traverse this rejection, as dependent Claims 2, 6, and 13 recite novel features clearly not disclosed by Sheu.

Dependent Claim 2, for example, depends from Claim 1 and recites that

> the minimum delay path ***on which the candidate nodes exist is one having maximum delay*** among minimum delay paths from the source node to each of the destination nodes.

Dependent Claims 6, 11 and 13, while directed to alternative embodiments, recite similar features. Accordingly, the remarks and arguments presented below are applicable to each of dependent Claims 2, 6 and 13.

As disclosed in an exemplary embodiment at Fig. 8, and its corresponding description in the specification, the one of the obtained minimum delay paths is the path that had the ***maximum delay*** from the source node to the destination node. Otherwise stated, Claim 2 limits the "one of the obtained minimum delay paths" on which the candidate node exists as being the delay path having the ***maximum delay***. As noted above, Sheu fails to limit the candidate nodes to those on a minimum delay path, whatsoever, much less to the minimum delay path having a maximum delay among the minimum delay paths, as recited in Claim 2.

In rejecting Claim 2, the Office Action relies on p. 612, ll. 35-43 of Sheu. This cited portion of Sheu, along with Fig. 1, describes a situation in which the end-to-end delays of two paths between a source node and a first destination node are 16 and 21, respectively, while the end-to-end delays of two paths between a source node and a second destination node are 19 and 10, respectively. Sheu then describes selecting the minimum delay paths 16 and 10, respectively, to transmit the data from the source node to each of the first and second destination nodes.

Therefore, this cited portion of Sheu merely describes a process of selecting separate minimum delay paths between a source node and a plurality of destination nodes by which to transmit data. This is in no way related to selecting the candidate nodes from the minimum delay path ... ***having maximum delay*** among minimum delay paths from the source node to each of the destination nodes, as claimed. More specifically, as argued in the previous response, Sheu fails to teach or suggest limiting the selection of the candidate nodes to the nodes on only one minimum delay path, whatsoever, much less limiting the selection of the

candidate nodes from the minimum delay path having the maximum delay, as recited in dependent Claims 2, 6, 11 and 13.

Thus, this cited portion of Sheu fails to disclose limiting the central candidate nodes, whatsoever, much less limiting the candidate nodes to nodes ***only*** on the ***one*** minimum delay path "***having maximum delay*** among minimum delay paths from the source node to each of the destination nodes" as recited in Claim 2.

Accordingly, for at least the reasons discussed above, Applicants respectfully request that the rejection of dependent Claims 2, 6 and 13 under 35 U.S.C. § 102 be withdrawn.

Consequently, in view of the present amendment and in light of the foregoing comments, it is respectfully submitted that the invention defined by Claims 1-9 and 11-13 is patentably distinguishing over the applied references. The present application is therefore believed to be in condition for formal allowance and an early and favorable reconsideration of the application is therefore requested.

Respectfully submitted,

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